Plasma confinement In THE GDT in A magnetic configuration with shifted turning points [[1]](#footnote-1)\*)

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Regimes of plasma confinement with enhanced relative pressure β in open magnetic trap GDT, which are of interest, can be achieved by increasing the energy density of fast anisotropic ions that move adiabatically between the turning points. Such a regime may be possible to implement by modifying the GDT magnetic system in such a way, that the turning points are shifted closer to each other.

This work is devoted to an investigation of plasma confinement in a new magnetic configuration with shifted turning points. An experimental series was conducted to optimize discharge operation conditions and to find confinement regimes, in which the magnetic flux excluded by plasma (the so-called diamagnetism) reaches its maximum. Another series was conducted with the aim of measuring the electron density and temperature radial profiles. The results reported are discussed and compared with analogous measurements in the case of the standard GDT magnetic configuration. A noted feature of the regime investigated is that the values of diamagnetism, measured in the central plane and in the plane including the turning point, are close to each other. In addition, the report describes the influence of plasma instabilities on a discharge, in particular, of the global sound mode [1] and of the Alfvén ion-cyclotron instability [2, 3] that occurs at the start of the discharge and continues during the whole discharge being non-linearly saturated.

References

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/L/Mu/ru/AL-Shmigelskiy.docx) [↑](#footnote-ref-1)